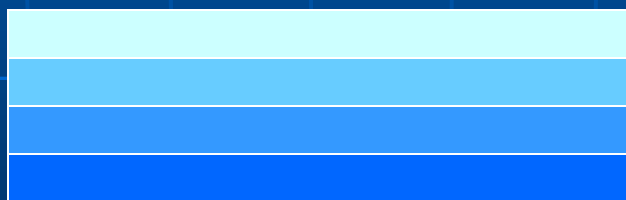


# **Taking A Horizontal Leap Forward**

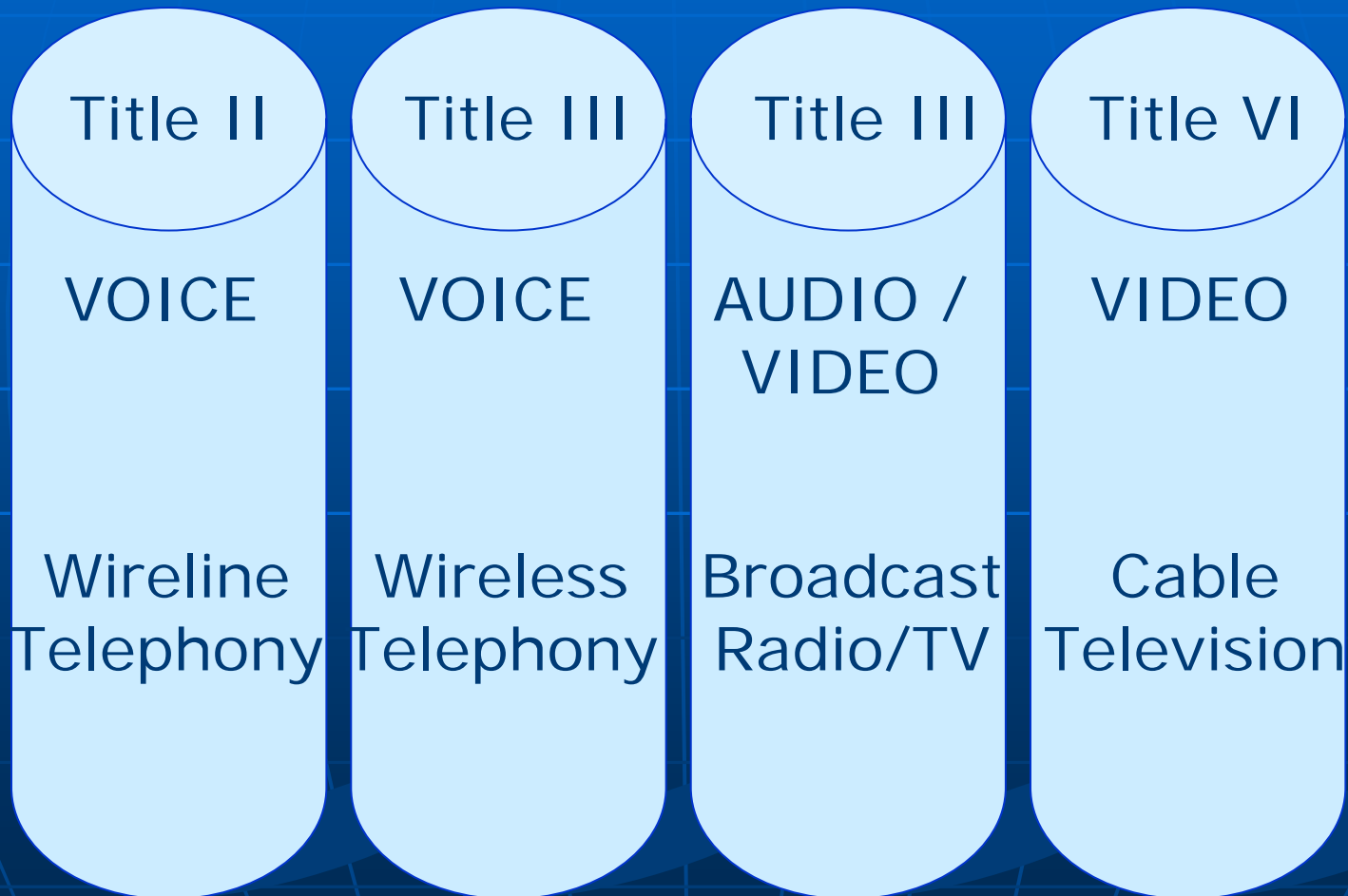
## **A Proposal To Reform U.S. Communications Law Based On The Network “Layers” Framework**



**Richard S. Whitt**  
**MCI Vice President for Federal Law and Policy**  
**April 2005**

**Part I:**  
**What Exactly Is This**  
**Network “Layers”**  
**Concept?**

**Currently, U.S. laws and regulations are organized conceptually into vertical “silos”**



# In the (Current) Old Days....

- The U.S. legal superstructure has been organized in vertical “silos” around the presumed marriage of retail service, service provider, and underlying technology.
  - **The Communications Act of 1934:** establishes the “silos” paradigm, with differing legal obligations and rights based on service/provider classifications.
    - **Title II** – telephony common carriers (tariffs, service rates and terms, certification, nondiscrimination, interconnection and unbundling rules)
    - **Title III** – radio and television broadcasters, mobile service providers, and satellite service providers (licenses, facilities, spectrum rules)
    - **Title VI** – cable communications providers (local franchises, carriage requirements, public access channels, ownership restrictions)
    - **Title I** – “ancillary jurisdiction” (some deem to include information services)
  - **The FCC’s Computer Inquiry rules (1970s-present):** a notable exception to the vertical approach, with unregulated “enhanced services” layered on top of regulated “basic services.”
  - **The Telecommunications Act of 1996:** silos redux.

# Legal Fiction Versus Physical Reality

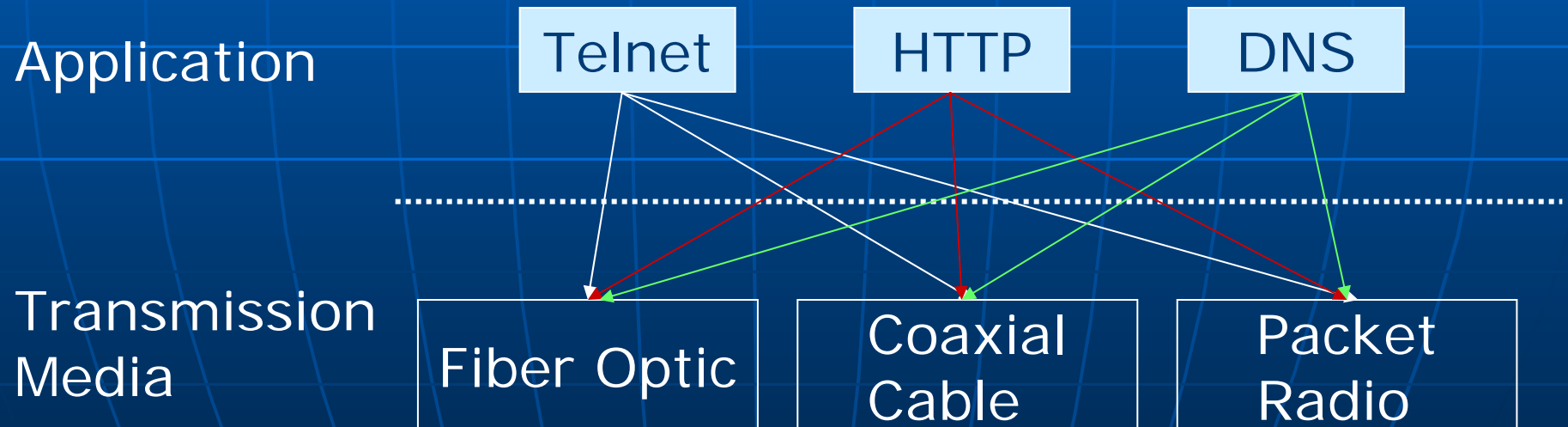
- Existing vertical “silos” fly in the face of several basic network design principles employed by engineers in the birth, growth, and success of the commercial Internet.
  - **The layering principle**: all data networks employ a common set of software-defined functional rules (or “protocols”), designed to create, transmit, and present packets of information to end users.
    - Physical transmission facilities operate at the “lower” layers of the data network.
    - Various interlinked software protocols operate at the “upper” layers of the data network.
  - **The “end-to-end” principle**: dumb networks (“the core”) tend to support smart applications (“the edge”).
    - In contrast, traditional telephone networks tend to employ smart switching infrastructure and dumb customer devices.

# The Ubiquitous and Indifferent Nature of IP

- The Internet Protocol (IP) has become the common “bearer” protocol operating at the heart of the Internet and other modern-day data networks.
- An important design attribute of IP is its completely ubiquitous, indifferent nature.
  - IP is agnostic regarding bearer underlying networks.
  - IP is agnostic regarding bearing applications and content.
- IP helps create the “virtuous hourglass.”
  - Convergence at the IP (middle) layer
  - Divergence at the networks (lower) and services (upper) layers
  - The end result: what MCI calls “NetVergence”
- Thus, IP overturns fundamental assumptions that have governed the communications world for decades.
  - Presumed distinctions between different “services” break down.
  - IP-enabled services themselves no longer are tied to discrete networks, facilities, technologies, or providers.
  - Proliferation of smart applications is key to Internet’s success.

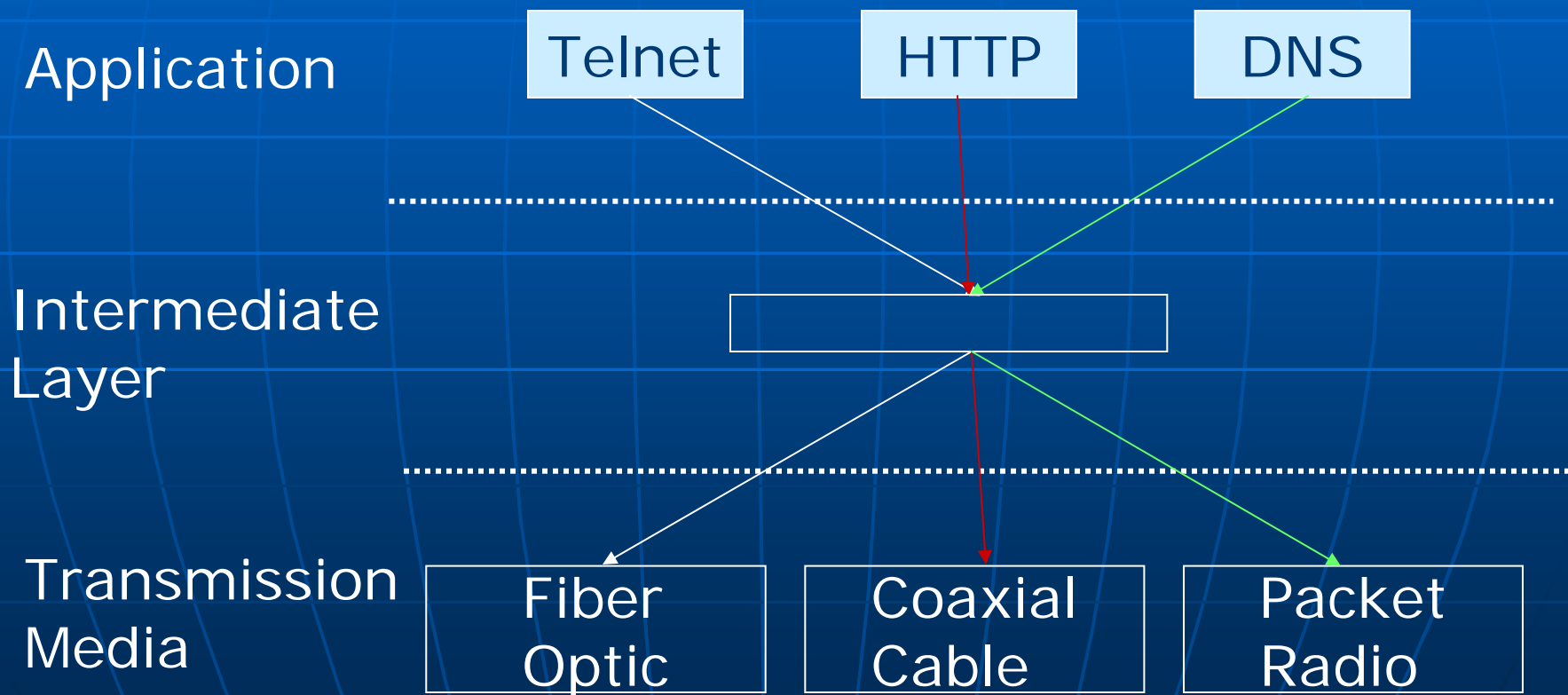
# Why Use Layers?

Without the use of layering, each individual application must be re-implemented for every type of network technology.



# Why Use Layers?

Inserting an intermediate layer provides a level of abstraction that makes the architecture much easier to manage.





# Communications System Layer Model

## Content Layer

Text, Speech, Music, Pictures, Video, etc.

## Logical / Code Layer

### Application / Services

Web Browsers, Email Client Software, MP3 Software, Word Processors, etc.

TCP / IP  
Protocol Suite

### Utility Protocol Layer

HTTP, SMTP, FTP, DNS, etc.

### Transport Layer

TCP, UDP

### Network Layer

IP, ICMP, IGMP

### Link Layer

Interface to the Physical Layer

## Physical Layer

Ethernet, Modem, DSL, Cable, T1, Fiber Optics, Satellite, Bluetooth, Wi-Fi, etc.

# Compelling Links Between Networks and Regulation

Many well-respected industry authorities draw compelling links between the way IP networks are engineered, and how such networks should be analyzed and regulated.

- Larry Lessig
- Yochai Benkler
- Kevin Werbach
- Lawrence Solum
- Robert Entman
- Douglas Sicker
- David Isenberg
- Vint Cerf
- Timothy Wu
- Michael Katz
- Philip Weiser
- Rob Frieden
- Craig McTaggart
- John Nakahata
- Scott Marcus
- Michael Powell (?)

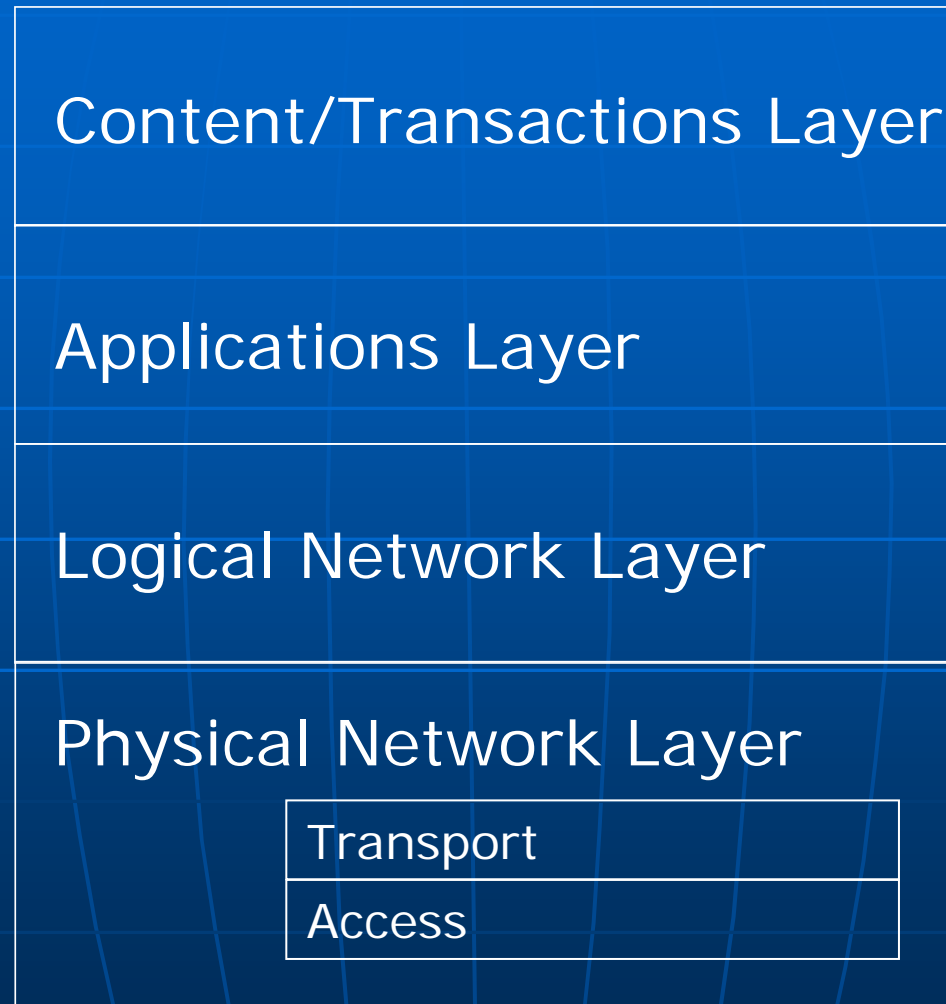
# Advantages of a Layers-Based Public Policy Framework

- Key advantages of a layered approach include:
  - Relies on well-established and enduring network engineering principles;
  - Avoids unsupportable static distinctions between services, networks, and providers;
  - Appropriately separates upper layers (end user applications and content) from lower layers (physical and logical infrastructure);
  - Groups and segregates pertinent public policy issues;
  - Provides insights about interdependence of different layers, including interconnection between networks;
  - Focuses on fostering greater competition to curtail pockets of market power within the layers; and
  - Promotes and preserves maximum innovation at the "edge" of the network.

# Some Key Principles

- The following principles are key for policymakers to employ a robust and nuanced layers-informed framework:
  - Respect the integrity of the layers.
    - Policymakers should not adopt layers-affecting regulations without at least (1) a compelling regulatory interest, and (2) consideration of layers-respecting alternatives.
      - Example: E-commerce issues (ISP liability)
  - Any regulation of layers activities should be narrowly-tailored.
    - Policymakers should focus on the pertinent layers-related activities, and avoid regulating one layer to address perceived issues or problems situated in another layer.
      - Example: IP-enabled applications and services (VoIP)
  - Regulation should be used primarily to address areas of market concentration by fostering robust competition.
    - Policymakers should combat the existence of market power in one layer by promoting competitive opportunities in that layer, and otherwise protecting end users in adjoining layers.
      - Example: Broadband platforms (DSL, cable modem)

# MCI's Proposed Layers Model



**Part II:**  
**How Can You Implement  
This Network “Layers”  
Concept?**

# “Operationalizing” the Layers Concept: A Continuum

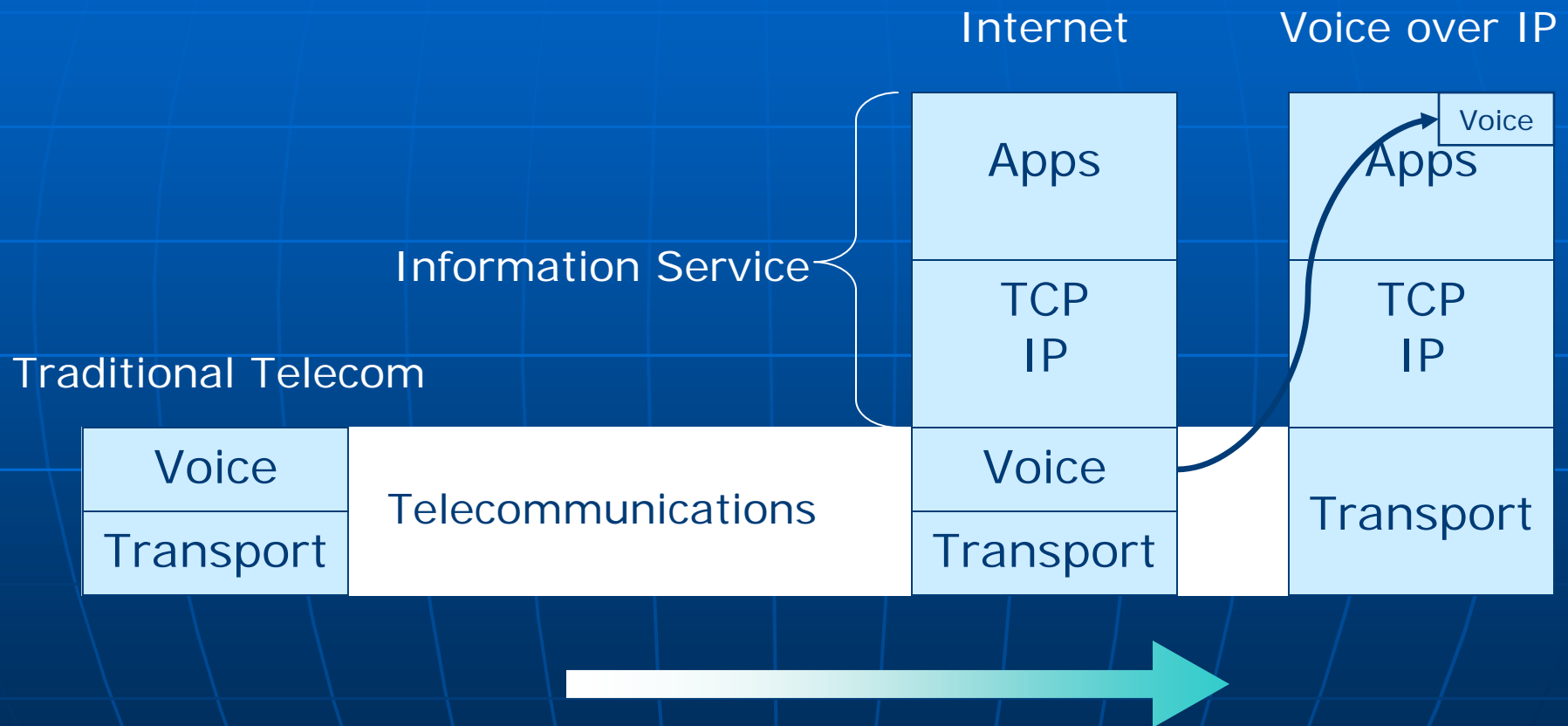
- There are at least three ways for policymakers to put the horizontal layers concept into concrete and effective form.
  - **Principles**  
Agencies can adopt guiding principles.
  - **Rules**  
Agencies can adopt binding regulations.
  - **Laws**  
Legislators can adopt governing statutes.
- Each step can be pursued separately, or as part of a coordinated transition plan.

# Adopting A Governing Federal Statute

- Working title: “The Internet Innovation and Broadband Competition Act of 2005”
  - Positioned as new “Title VIII” of Communications Act
  - Coexists with existing legal silos during period of market transition
- FCC directed to employ layers concepts:
  - As guiding principles (such as interpreting “public interest” test)
  - As binding rules (such as applying “forbearance” authority)
- Layers framework defined as a flexible conceptual guide
  - Physical, Logical, Applications, and Content layers
- Overarching principle: All entities generally are free to compete in and between the different network layers, without legal or regulatory constraints.
- Key legal dichotomy established:
  - IP Applications (generally unregulated)
  - Broadband Platforms (minimal carrier-like regulation)



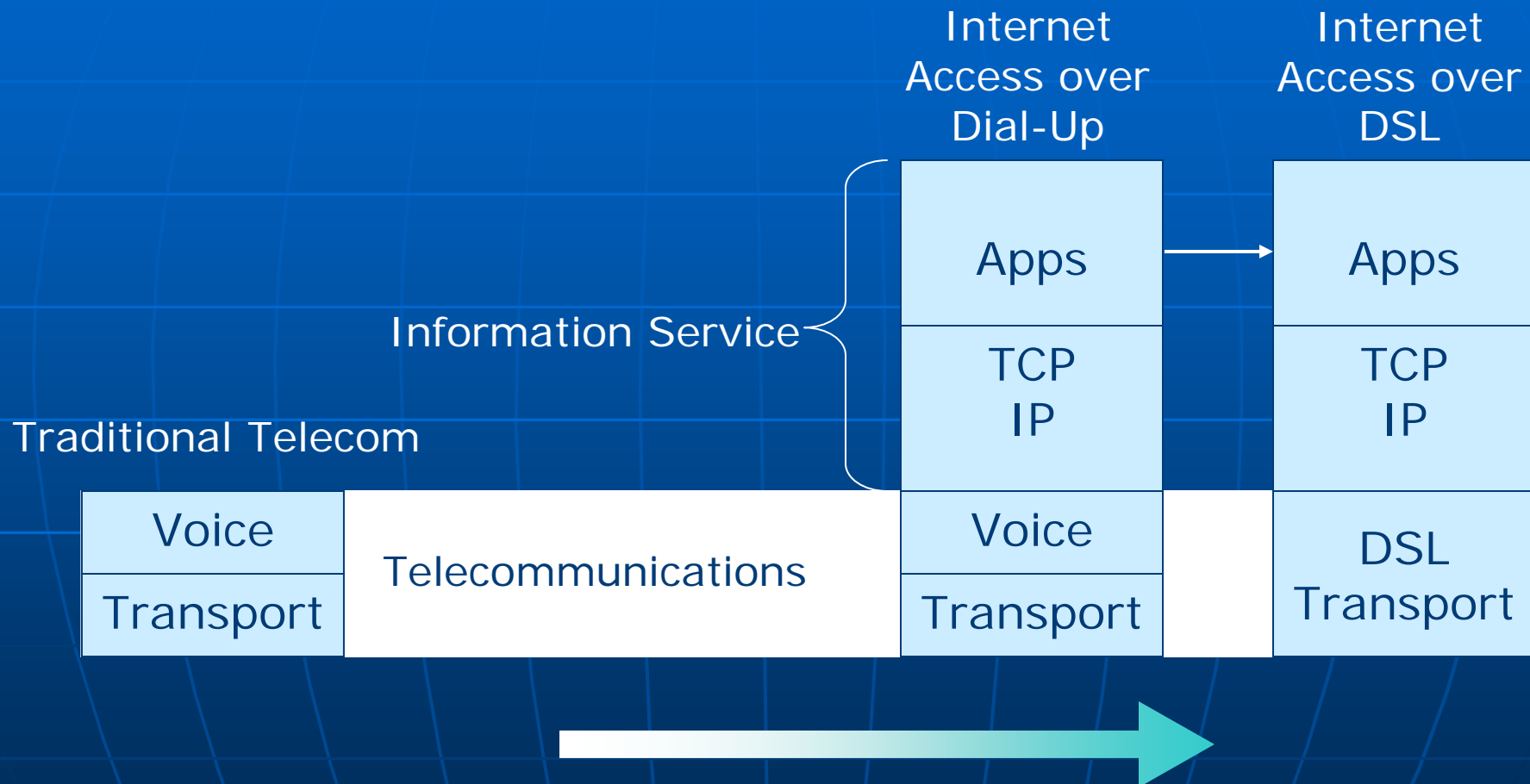
# Layers Analysis Supports Non-Telecom Regulation of VoIP



# The Proposed Federal Legislation: IP-Enabled Applications and Services

- “IP-enabled applications, technologies, and services” would be somewhat analogous to the definition of “information services” under the Act.
  - VoIP is one of many IP-based applications, divorced from any particular technology platform or network.
  - No retail or wholesale common carriage (Title II) regulation, or other legacy requirements, generally would be permitted, including by State legislatures and State public service commissions.
  - To limit unnecessary and harmful regulatory role, the FCC’s “ancillary” jurisdiction under Title I would be defined narrowly as:
    - Requiring preemption of inconsistent state regulation; and
    - Authorizing imposition of certain public interest requirements (such as 911 and CALEA compliance) only where the IP service in question:
      - connects with the circuit-switched network, and/or
      - reasonably can be viewed as a commercial and functional substitute for existing voice telephony service.

# Layers Analysis Supports DSL As Telecommunications Service



# The Proposed Legislation: Broadband Access Platforms

- “Broadband access platforms” would be somewhat analogous to the definition of “telecommunications services” under the Act.
  - DSL, cable modem service, and other broadband services fundamentally are communications transmission platforms.
    - The application layer retail service (high-speed Internet access) is separate from the underlying physical access layer (broadband platform).
  - Broadband access platforms would be exempt from many unnecessary Title II common carriage requirements, including all Federal and State retail regulation.
    - Remaining “light-touch” obligations would include network interconnection, simple resale, USF support, emergency services, CALEA, and access for disabled.
  - The FCC would be directed to facilitate robust multi-modal broadband competition.
    - Wireless (licensed and unlicensed), powerline, satellite options would be vigorously promoted.
  - Broadband access platforms with market power could be subject to potential nondiscrimination safeguards to protect dependent end users and ISPs.

# Potential Competitive Safeguards For Current Broadband Market

## Net Neutrality:

End users  
(applications, devices, content)

Only Michael Powell's  
"Four Net Freedoms"  
Principles, for now

## Open Access:

ISPs  
(Computer Inquiry Rules -- ILECs and cable)

Remains at considerable  
risk from FCC

## Intramodal Competition:

CLECs  
(DSL UNEs)

Hampered significantly  
by courts, FCC's TRRO

## Intermodal Competition:

Other facilities-based providers  
(WiMax, BPL, satellite, etc.)

Promising, but we're still  
waiting.....

# The Proposed Federal Legislation: Other Key Provisions

The FCC would be directed to:

- Reform Inter-carrier Compensation

- Phase out existing federal and state inter-carrier compensation schemes, and adopt uniform, cost-based rates (presumably “bill and keep”) across all communications services and geographic boundaries.
- Transfer any and all implicit subsidies to explicit universal service funds.

- Strengthen Universal Service

- Extend Federal USF funding obligation to all broadband access platform providers.
- Adopt contribution mechanism based on end user’s network connections.
- Establish a new “universal broadband access” program dedicated to providing broadband connectivity to those residential customers who otherwise are unable to receive or afford a commercially-viable offering.

- Preserve “Social Goods”

- Apply certain “public interest” requirements (such as emergency services (911), law enforcement (CALEA), and access for the disabled) to broadband access platforms, as well as to certain IP-based services.

- Deregulate IP-Based Legacy Services

- Eventually remove existing regulatory burdens and benefits that apply to legacy services -- such as wireline and wireless voice telephony, cable television services, satellite services, and broadcast television and radio services – that are carried as IP-enabled applications.

# Setting the Record Straight

- While certain groups have criticized discrete elements of the MCI model, a layers-informed legal framework would further important public policy objectives by:
  - offering a flexible, yet well-grounded, conceptual tool intended primarily to limit governmental intervention in the marketplace;
  - posing the right kinds of questions for policymakers to ask, without necessarily dictating particular legal or policy outcomes;
  - tending to lead to highly deregulatory policy conclusions;
  - not seeking to disturb salient consumer and competitive benefits of entities' vertical integration across different network layers;
  - envisioning government's primary role as preserving and enhancing competition and innovation, both at the network "edge" and between and among competing network platforms; and
  - viewing excessive market concentration, defined under traditional antitrust principles, as the key factor in considering the need for any possible economic regulation.



# In Conclusion

- The network layers approach offers a compelling and workable alternative to the Communications Act's outdated vertical "silos" structure.
- Congress should adopt a layered framework as it considers reform of the communications laws.
  - There should be a significant presumption against the imposition of unwarranted legal obligations and third party liability on application providers and Internet service providers.
  - National policy should ensure that IP-enabled applications such as VoIP are not subject to common carrier regulation.
  - Comprehensive reform of existing carrier compensation and subsidy schemes is necessary to avoid imposing inequitable burdens on new IP-enabled technologies.
  - Full deregulation of all legacy retail services provided over IP networks -- voice, data, video -- may be warranted.
  - Broadband access platforms should be subject to tailored, "light-touch" carrier regulation, including possible end user and/or ISP nondiscrimination safeguards where there is market concentration.

For copies of several white papers discussing MCI's proposed network layers framework, visit: [www.mci.com/publicpolicy](http://www.mci.com/publicpolicy)